

U.S. Patent Application Serial No. 09/864,862  
Reply to Office Action dated October 6, 2004

**Remarks:**

Applicants have read and considered the Office Action dated October 6, 2004 and the references cited therein. Claims 6 and 7 have now been cancelled.

In the Action, the Restriction Requirement was made Final. Claims 6 -7 were previously withdrawn as directed to a non-elected invention. Claims 6 and 7 have now been cancelled.

In the Office Action, claims 1-2, 4, 10, 12 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Copson in view of Levinson. The Action stated that Copson shows a method of lyophilizing material comprising the steps of placing material to be processed in a chamber, creating a microwave field in the chamber, passing the water vapor through a condenser, stirring the microwaves with a stirrer having arc inhibiting surfaces and providing selected surfaces in the chamber with arc inhibiting surfaces. The Action stated that Copson does not teach the steps of varying temperature and pressure conditions and controlling the microwave power in response to detected corona discharges, but that Levinson teaches a product drying method of varying temperature and pressure in response to the detected corona discharges as claimed. The Action concludes that it would be obvious to one of ordinary skill in the art to provide the method of Copson with steps of varying temperature and pressure conditions for controlling the microwave power in response to the detected corona discharge as taught by Levinson in order to improve the drying efficiency.

Applicants have carefully reviewed the cited references and assert that the structure and method disclosed are not actually as characterized in the Office Action. With respect to Copson, Applicants assert that there are no arc inhibiting surfaces shown or disclosed. The Action states that the stirrer has arc inhibiting surfaces and is directed to Figure 1 with the left and right corner of Element 10A. However, Figure 1 is merely a diagrammatic view and although the fan blades may have curved ends, this is no different from an ordinary fan blade, which as curved ends, but also has edges along the length of the blade that are not arc inhibiting. Figure 1 does not show

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that the edges of the blades are not sharp. The rounded arc inhibiting surfaces cannot be accurately depicted in such a diagrammatic view and there is no written description to suggest that the fan blades have arc inhibiting surfaces. Applicants assert that such an ordinary fan blade would be likely to cause corona discharge. In contrast, as clearly shown in the drawings of the present invention, arc inhibiting surfaces require much more than simply removing a focus point. Rather, the ends are curved and the edges are removed so all surfaces are rounded to inhibit arcing and corona discharge. Applicants assert that Copson neither teaches nor suggests to one of ordinary skill in the art any type of detection and/or minimalization of the corona discharge. The fan is described only as a fan acting as a mode stirrer. There is no discussion of corona discharge detection, or of inhibiting arcing and corona discharge in the Copson reference. Applicants assert that such arc inhibiting is neither shown nor suggested by Copson and is not a problem to be solved by Copson.

In addition, the Action states that Copson teaches arc inhibiting surfaces within the chamber. Applicants have reviewed the reference and do not believe that Copson addresses corona discharge or inhibiting arcing. The drawings provided only show diagrammatic use of the chamber and the elements within the chamber. No shielding is present or discussed. No surfaces are shown or discussed. Applicants assert that Copson neither teaches nor suggests the arc inhibiting surfaces and that it would not be obvious to one of ordinary skill in the art, as Copson fails to address the problem of corona discharge protection and/or inhibiting corona discharge through shielding and arc inhibiting surfaces.

Applicants note that Levinson is not directed to freeze drying, but rather is directed to ordinary heating of articles in the microwave, such as french fries. Although Levinson is taking temperature measurements, the temperature measurements are not being taken to detect or control corona discharge. In fact, as stated at column 6, lines 29-58, although temperatures are being monitored, there is no control in response to temperature measurements. The burning is used to monitor the drying for use in future operations, but adjustments are not made in response

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to a corona discharge as in the present invention. Lines 35-36 at column 6 of Levinson state that "If undesirable burning (spot heating of article 6) occurs, next time operate at a lower power level." Levinson is not used for freeze drying and does not detect corona discharge or adjust in response thereto. Moreover, Levinson does not need to necessarily detect and control corona discharge. At lines 51-55, Levinson states that "It should be noted that the converse, promoting corona and arcing discharges, which can result in burning temperatures at the end of a temperature sensor, need not be considered undesirable if the article, as drying clay, can withstand such temperatures. In this case, metal sensor element 12 can serve to concentrate burning energy at a planned location within a high temperature resilient drying article." Clearly, Levinson does not mean to eliminate corona discharge and is not providing arcing inhibiting surfaces.

As neither Copson nor Levinson teach or suggest arcing inhibiting surfaces and as neither is used to detect corona discharges or control conditions to avoid corona discharge, Applicants assert that the rejection of claims 1-2, 4, 10, 12 and 13 is traversed. The present invention provides advantages and seeks to overcome problems that have not been raised in either of the cited references or any combination thereof. One of ordinary skill in the art cannot achieve the present invention without the improper use of hindsight.

Claims 5, 8, 11 and 14 were rejected under 35 U.S.C. § 103 as being unpatentable over Copson in view of Levinson and further in view of Takahashi. The Examiner asserts that Copson and Levinson show the recited method except for the direct shielding of the selected surfaces. The Action states that it would be obvious to provide the method of Copson with the shielding as taught by Takahashi. Applicants assert that Takahashi is used for ceramic manufacturing process and although it does use microwaves and has shielding, the shielding is not used for arc inhibiting to avoid corona discharge. Moreover, as the ceramic type articles would not need shielding as they can withstand corona discharge, Takahashi would not be shielding from arcing or corona discharge. Takahashi is silent as to corona discharge and arcing

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or arc inhibiting. Moreover, Takahashi has a microwave heating zone along with infrared and other heating devices rather than a closely controlled chamber so that the control of temperature and pressure needed for lyophilization is not possible. Moreover, as with Levinson, Takahashi is not related to lyophilization and one of ordinary skill in the art would not look to Takahashi for modification of a lyophilization method. As the cited prior art does not teach combination with the other cited references, and even if combined, does not arrive at the present invention, Applicants assert that the claims patentably distinguish over the cited references or any combination thereof. Therefore, Applicants assert that claims 5, 8, 11 and 14 patentably distinguish over the cited references.

Claim 3 was objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form. In addition, claim 9 has been indicated as allowed. Applicants thank the Examiner for the indication of allowable subject matter.

Applicants assert that the claims as submitted are in condition for allowance. A speedy and favorable action on the merits is hereby solicited. If the Examiner feels that a telephone interview may be helpful in this matter, please contact Applicants' representative at (612) 336-4728.

Respectfully submitted,

MERCHANT & GOULD P.C.

Dated: 4/6/05

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